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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/542,137
Filing Date: July 12, 2005
Appellant(s): REDERT ET AL.

Daniel Piotrowski
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 28 December 2008 appealing from the Office action mailed 31 August 2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

7,103,211	Medioni et al.	9-2006

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Regarding Claim 1, Medioni et al discloses a method for acquiring a substantially complete depth map from a 3-D scene with the steps of: a) acquiring at least one image of said 3-D scene using less than three cameras (Fig. 1A, camera 110) (col. 7, lines 8-10), b) acquiring partial depth map from said least one image (two adjacent views are treated as a stereo pair and used to generate partial depth maps) (col. 5, lines 13-32), c) acquiring derivates of depth information from said at least one image (a Plessey corner extractor which is a derivative filter of the first order is initialized to detect a pre-defined number of features under the conditions specific to the face area of the picture) (col. 8, lines 5-16), d) extending said partial depth map by adding non-relevant information to said partial depth map, creating a pixel dense full depth map being spatially consistent with both said partial depth map and said derivates of depth information (Fig. 6A) (determining a spatial system of camera posed from each of the valid image frames and feature points accurate enough to be used as an initial starting point) (col. 9, lines 19-30).

Regarding Claim 2, Medioni et al discloses a method, characterized in that said non-relevant information extending said depth map is calculated by maximizing a probability function containing said non-relevant information, said partial depth map and said derivates of said depth map (Fig. 6A) (processing outlier features rejection and coarse camera estimation) (col. 9, lines 19-30).

Regarding Claim 3, Medioni et al discloses a method, characterized in that said partial depth information and said derivates of depth information is acquired by quantitative image processing (Plessey corner extractor) (col. 8, lines 5-16).

Regarding Claim 4, Medioni et al discloses a method, characterized in that said partial depth information is acquired by detecting a local amount of image texture, and determining depth from spatially high textured areas (3D mesh is generated incrementally generated incrementally by triangulating the matched or tracked feature using the computed camera pose, subsequently, the mesh is textured with reference to one or more of the image frames) (col. 5, lines 13-32).

Regarding Claim 5, , Medioni et al discloses a method, characterized in that said partial depth information and said derivates of depth information is acquired by qualitative image processing (Plessey corner extractor) (col. 8, lines 5-16).

Regarding Claim 6, Medioni et al discloses a method, characterized in that said partial depth information is acquired by object segmentation to determine objects within said at least one image and by detecting the ordering of objects (each image frame is subdivided into small regions) (col. 8, lines 5-16).

Regarding Claim 7, Medioni et al discloses a method, characterized in that human depth perception is modeled by depth sensors and that said pixel dense full depth map is calculated based on properties of said depth sensors (Fig. 5A) (col. 8, lines 54-65).

Regarding Claim 8, Medioni et al disclose a method, characterized in that said pixel dense full depth map is calculated by perturbating pixel values not defined by said

partial depth map and said derivates of said depth map and minimizing said probability function (Fig. 5A, block 506) (features that would be extracted outside of the face segmented area are discarded) (col. 8, lines 54-65).

Regarding Claim 9, Medioni et al discloses an integrated circuit providing image processing of said at least one image (computing device is loaded with a 3D modeling module implementation) (col. 6, lines 47-60).

Regarding Claim 10, Medioni et al discloses a method, for use in consumer electronics, television and computer vision products (modeling mechanism that can be easily deployed, for example in a home computer with a web camera) (col. 5, lines 29-32).

Regarding Claim 12, Medioni et al discloses a system for acquiring a substantially complete depth map from a 3-D scene, the system comprising: a) less than three cameras for acquiring at least one image of said 3-D (Fig. 1A, camera 110) (col. 7, lines 8-10); and, b) an integrated circuit for providing image processing of said at least one image (computing device is loaded with a 3D modeling module implementation) (col. 6, lines 47-60), said integrated circuit comprising: c) acquiring partial depth map from said at least one image (two adjacent views are treated as a stereo pair and used to generate partial depth maps) (col. 5, lines 13-32), d) acquiring derivates of depth information from said at least one image (a Plessey corner extractor which is a derivative filter of the first order is initialized to detect a pre-defined number of features under the conditions specific to the face area of the picture) (col. 8, lines 5-16), and e) extending said partial depth map by adding non-relevant information to said

partial depth map, creating a pixel dense full depth map being spatially consistent with both said partial depth map and said derivates of depth information (Fig. 6A) (determining a spatial system of camera posed from each of the valid image frames and feature points accurate enough to be used as an initial starting point) (col. 9, lines 19-30).

(10) Response to Argument

Appellant, on page 4, last paragraph and page 5, first paragraph, argues that Medioni et al does not disclose "a) acquiring at least one image of said 3-D scene using less than three cameras".

In response, Medioni et at al in col. 7, lines 7-22, and Fig. 1A discloses ***"A single camera, such as the one 110 in Fig. 1A produces a sequence of image frames of a head in motion (i.e., moved from one direction to another)"***. Additionally, Medioni et al in col. 5, lines 12-14 discloses ***"techniques for generating a fully-textured 3D model of a human face using a single camera"***. There is nothing in the claimed language that the "partial depth map is acquired from an image and not a sequence of image frames". The claimed language recites "acquiring at least one image". Medioni et al discloses a "sequence of image frames" which is being interpreted by the examiner as "at least one image" since a "sequence of image frames" includes at least one image. Additionally, there is nothing in the claimed language that requires that the image being acquired for the 3-D scene should dynamic and not static as argued by the appellant in the recited sections of the specification.

Appellant, on page 8, first paragraph, argues that Medioni et al does not disclose "b) acquiring partial depth map from at least one image".

In response, Medioni et al in col. 5, lines 13-32 discloses ***"Then, two adjacent views are treated as a stereo pair and used to generate partial depth map"***. There is nothing in the claimed language that requires that the image being acquired for the 3-D scene should dynamic and not static as argued by the appellant. The claimed language recites "acquiring at least one image". Additionally, the analysis required to acquire a substantially complete depth map form a 3-D scene as argued by the appellant in the recited sections of the specification.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Satwant K. Singh/

Examiner, Art Unit 2625

Conferees:

/Twyler L. Haskins/

Supervisory Patent Examiner, Art Unit 2625

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